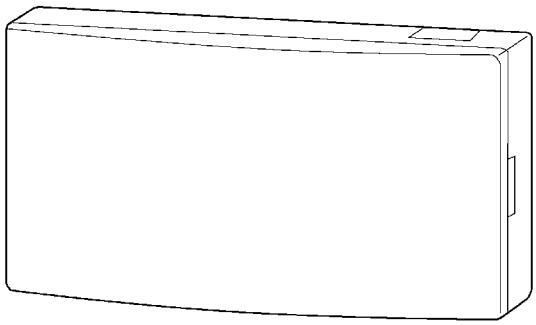
ORDER NO. KMS0003492C1

F5

Service Manual

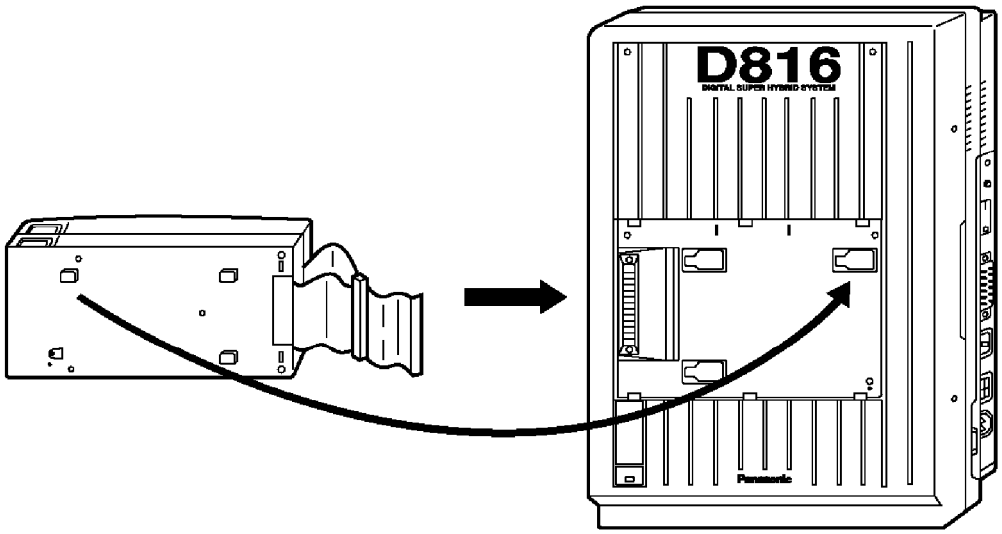
MESSAGE UNIT FOR DIGITAL SUPER HYBRID SYSTEM

KX-TD190



Panasonic

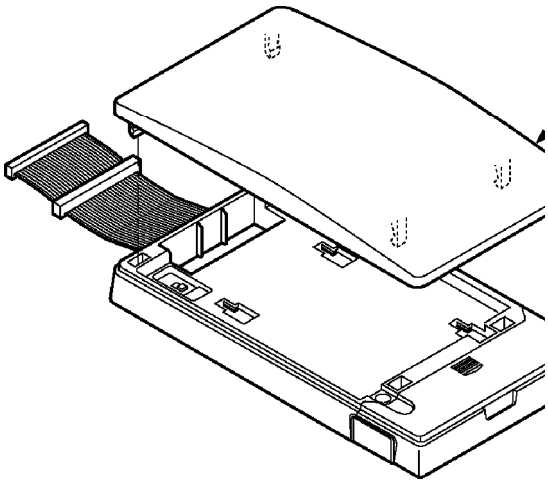
1. LOCATION OF THE UNIT



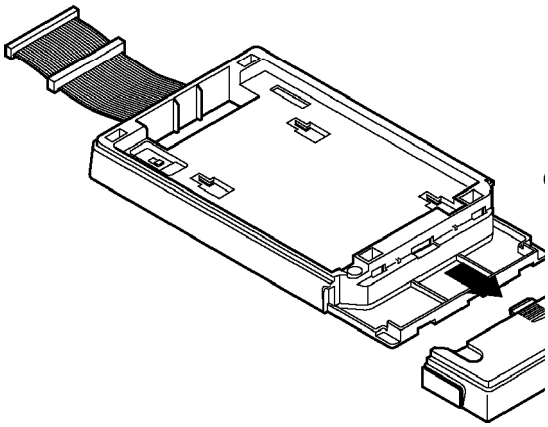
The location of the optional cards is shown over.
Precaution : Do not touch parts on the unit.

2. DISASSEMBLY INSTRUCTIONS

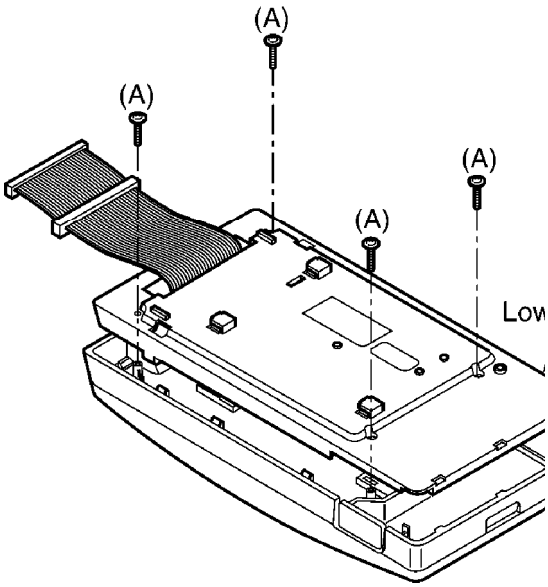
2.1. HOW TO REMOVE THE TOP COVER / (Procedure 2.1.)

(1) Remove the Top cover.	

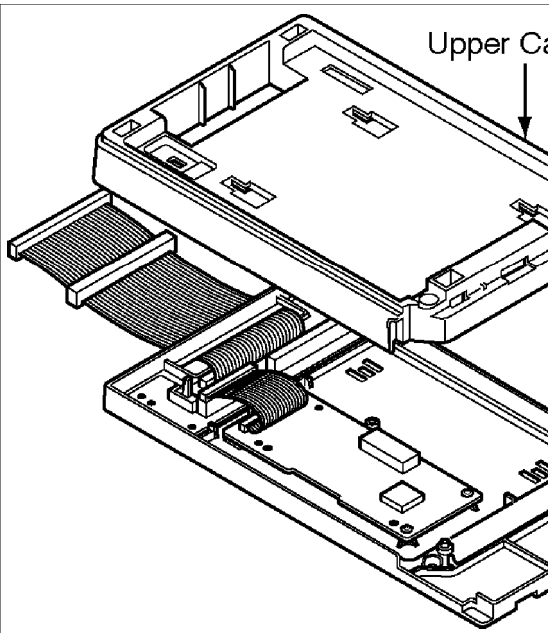
2.2. HOW TO REMOVE THE CBLE COVER / (Procedure 2.1. → 2.2.)

(1) Slide the cable cover in the direction of the arrow.	

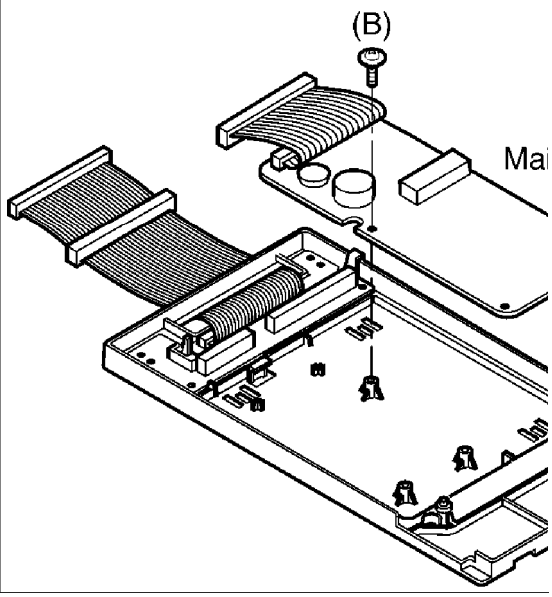
2.3. HOW TO REMOVE THE LOWER CABINET / (Procedure 2.3.)

(1) Remove the 4 screws (A). **(2) Remove the lower cabinet.**	

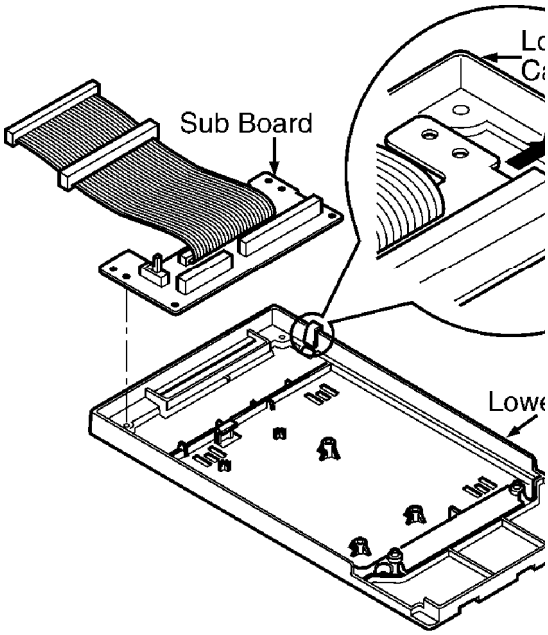
2.4. HOW TO REMOVE THE UPPER CABINET / (Procedure 2.1. → 2.2. → 2.4.)

(1) Remove the upper cabinet.	

2.5. HOW TO REMOVE THE LOWER COVER / (Procedure 2.1. → 2.2. → 2.4. → 2.5.)

(1) Remove the 4 screw (B). **(2) Remove the main board.**	

2.6. HOW TO REMOVE THE LOWER COVER / (Procedure 2.1. → 2.2. → 2.4. → 2.5. → 2.6.)

(1) Remove the sub board, pressing the rib the direction of the arrow.	

3. CIRCUIT OPERATION

3.1. FUNCTION

DISA CARD is an optional card that automatically responds to the incoming signals on the CO lines without operator, and by receiving the secondary dial (DTMF signals) that calls the specific extension, connects with the MODEM and between the CO lines. The number of channels is 2.

Function	Description
Sending OGM	Sending OGM (Out Going Message) stored in Record/Play IC to the CO line. 2 types of OGM for 32 sec. each are stored.
DTMF signal detection	After sending OGM to CO line, detecting the incoming signal of DTMF.
Call between CO lines	Two call parts for call between CO lines.
DTMF repeat	When calling between the CO lines, receiving the DTMF and sending it to maintain the certain level of the DTMF signals.
End of call detection	When calling between the CO lines, detecting the no tone, the cyclic tone and the continuous tone. 2 channels/1 path, total 4 channels.
OGM record	Recording the OGM from the specific extension into Record/Play IC. Controlling the level by AGC circuit. Only one channel is available as the recording channel.
FIFO communication	Communicating between CPU on this card and main CPU through FIFO memory.

3.2. EXPLANATION OF THE CIRCUIT OPERATION

DISA CARD consists of the following.
CPU Circuit
Parallel FIFO (First In First Out) Memory Circuit
OGM (Out Going Message) Record /Play Circuit
DTMF Repeat Circuit
End of Call Detection Circuit
Highway Control Circuit

3.2.1. CPU Circuit Composition:

68C03 8 bit CPU (IC110)
ROM 32k bite (IC111)
SRAM 8k bit (IC113)
IC101, IC76, etc.

Circuit Operation:
This circuit is a circuit which controls the DISA CARD according to the program in the ROM (IC111) by the CPU (IC110). It is connected with main CPU on CPU CARD through the Parallel FIFO Circuit, and controls this card by following the commands from the main CPU.

3.2.2. Parallel FIFO Memory Circuit Composition:

Gate Array (IC106)
IC102, IC103, IC104, IC105, etc.

Circuit Operation:
Parallel FIFO Memory Circuit is a circuit which functions the data communication interface between the DISA-CPU and the main CPU on CPU CARD. This circuit has each 16 bite 8 bit~64 buffer in the up and down directions. This FIFO memory is functioned by Gate Array (IC106).

3.2.3. ADPCM CODEC Circuit Composition:

ADPCM IC (IC53, IC54)
CODEC IC (IC17, IC61)
AGC Circuit (IC70, Q7, Q8, etc.)
Clock Generation Circuit (IC77, IC74, etc.)

Circuit Operation:
This circuit is the circuit for recording/playing the OGM. There are 2 record/Play ICs located above the one card. It is possible to an analog signal is CODEC (IC61). Then is possible through the AGC circuit and recorded in the record/Play IC (IC53, IC54). By the record/Play IC, the recorded voice signal is changed to CODEC (IC61, IC17). Then it is placed in the UHW 6.

3.2.4. DTMF Repeat Circuit Composition:

CODEC IC (IC20, IC21)
Filter IC (IC13, IC14)
DTMF Transceiver IC (IC9, IC10)

Circuit Operation:

This circuit is a circuit which receives the DTMF signal (IC9, 10) through the highway (IC20 - IC13, IC21 - IC14) once and sends (IC9, 10) to the highway (IC20, IC21) to cover the level reduction of the DTMF tone caused by the line loss during CO-CO call.
Normally, output of this circuit is open, and once it detects the DTMF signal (IC9, 10) at CO-CO call, the output connects with UHW 6 of the up highway and then sends the DTMF signal (IC9, 10). Also this circuit is used as the DTMF receiver (IC9, 10), and receives the secondary dial when the DISA signal incoming. Two of this circuit are installed on one card (TS16, TS18 of DHW 6).

3.2.5. End of Call Detection Circuit Composition:

PI0 (IC4)
IC24, IC26, IC28, IC30, etc.

Circuit Operation:
This circuit is a circuit which detects the end of call at CO-CO call. It converts whether the voice exits or not into the logic level (IC24, 28, 30), then presents it to CPU (IC111) through Gate Array (IC106). There are three methods for detecting the end of call as follows.

- **No tone detection**
- **Cyclic tone detection**
- **Continuous tone detection**

The four of this circuit are installed corresponding to each time slot of TS16~19.

3.2.6. Highway Control Circuit Composition:

C37, IC42, IC67, etc.

Circuit Operation:
This circuit is a circuit which transfers the data in the HWS 6 of the down highway onto HWR 6 of the up highway for calling between CO and CO. TS16~19 are controlled individually. The CPU (IC110) controls the gate IC (IC37, 42, 67) through PI0 (IC106), connects DHW 6 and UHW 6.

4. HOW TO REPLACE THE FLAT PACKAGE IC

If you do not have the special tools (for example: SPOT HEATER) to remove the SPOT HEATER'S Flat IC, If you have solder (large amount) a soldering iron and a cutter knife, you can easily remove IC's even though large than 100 pin.

4.1. PREPARATION

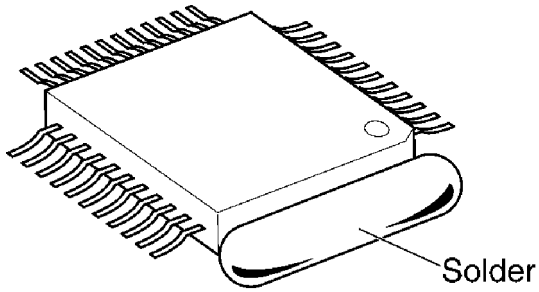
- **SOLDER / Sparkle Solder 115A-1, 115B-1 or Almit Solder KR-19, KR-19RMA**
- **Soldering iron / Recommended power consumption is between 30 W to 40 W. / Temperature of Copper Rod 662 ± 50°F (350 ± 10°C) / (An expert may handle a 60~80 W iron, but beginner might damage foil by overheating.)**

- Flux / HI115 Specific gravity 0.863 / (Original flux should be replaced daily.)

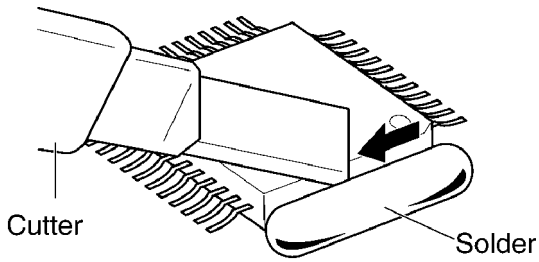
4.2. FLAT PACKAGE IC REMOVE PROCEDURE

1. When all of the IC lead can not been seen at the standard degree, fill with large quantities of solder.

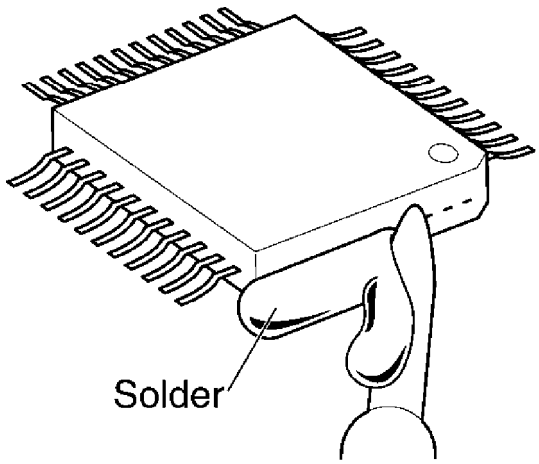
Note:
If you do not fill with solder and directly cut the IC lead with the cutter, stress may build up directly in the P.C.board's pattern. If you do not fill with large quantities of solder as in step 1 the P.C.board pattem may be removed.



2. Using a cutter, cut the lead at the source. (Cut the contents with the cutter lightly 5 or 6 times.)



3. Remove when the solder melts. (Remove the lead at the same time.)



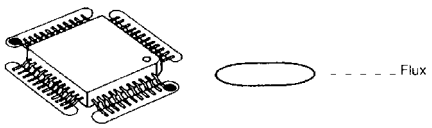
After removing the Flat IC and when attaching the new IC, remove any of the excess solder on the land using the soldering wire, etc. If the excess solder is not removed from the land, the IC will slip and not be attached properly.

4.3. FLAT PACKAGE IC INSTALLATION PROCEDURE

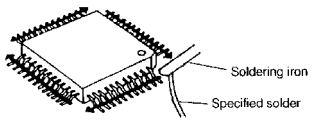
1. Temporary fix FLAT PACKAGE IC by soldering on two marked pins.

***Check the accuracy of the IC setting with the corresponding soldering foil.**

2. Apply flux for all pins of FLAT PACKAGE IC.



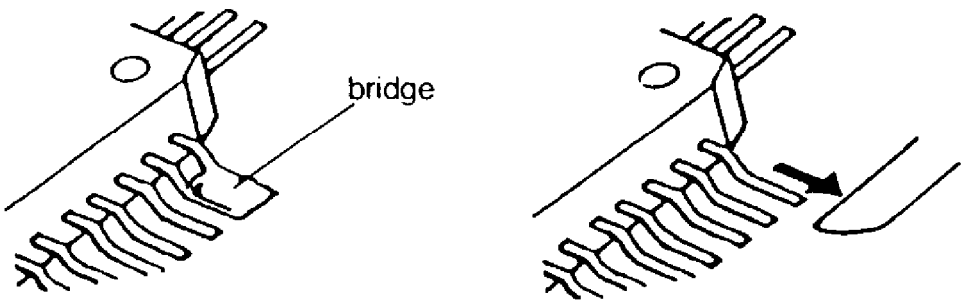
3. Solder using the specified solder, in the direction of the arrow, by sliding the soldering iron.



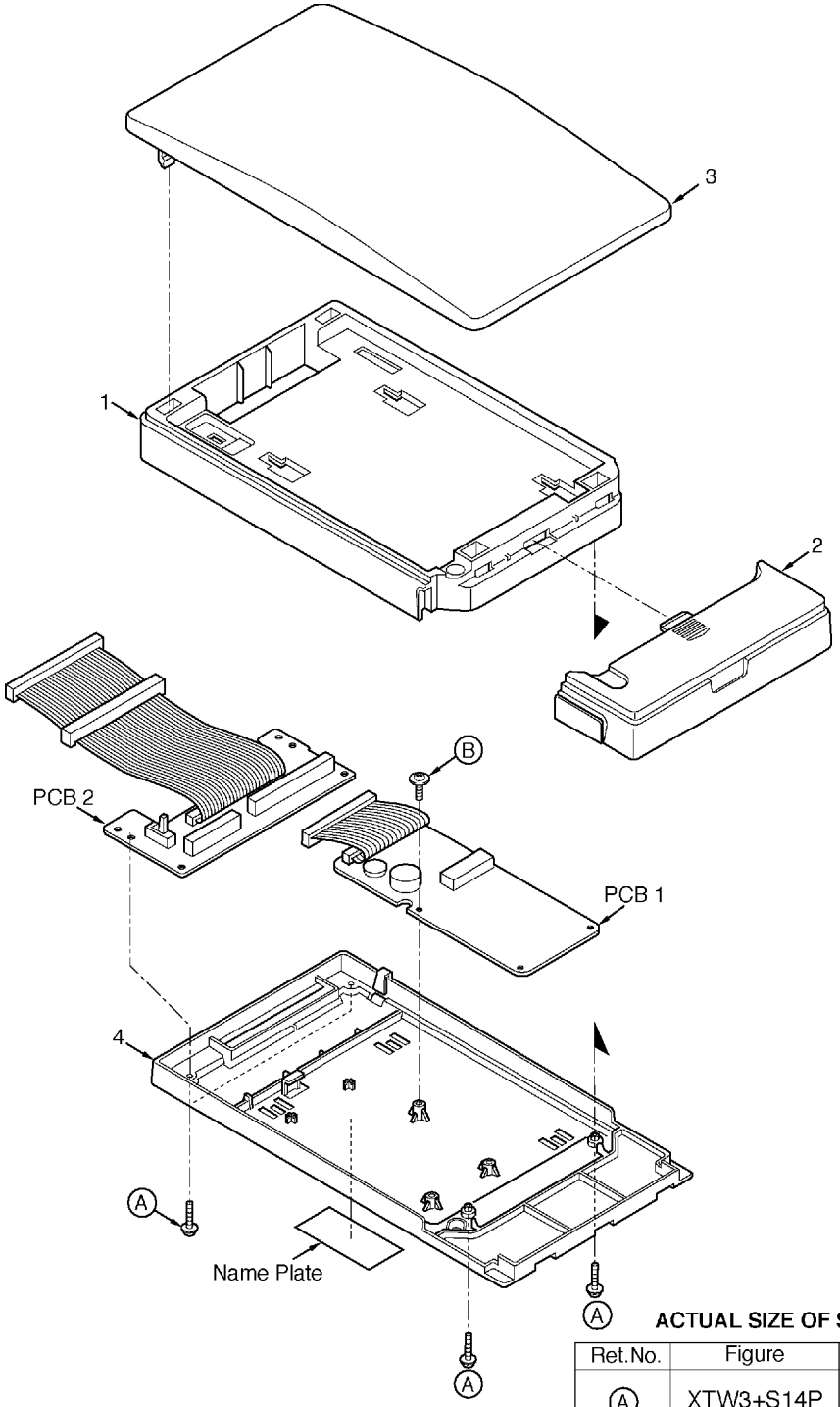
4.4. BRIDGE MODIFICATION PROCEDURE

1. Lightly re-solder the bridged portion.

2. Remove the remaining solder along pins using a soldering iron as shown in the figure below.



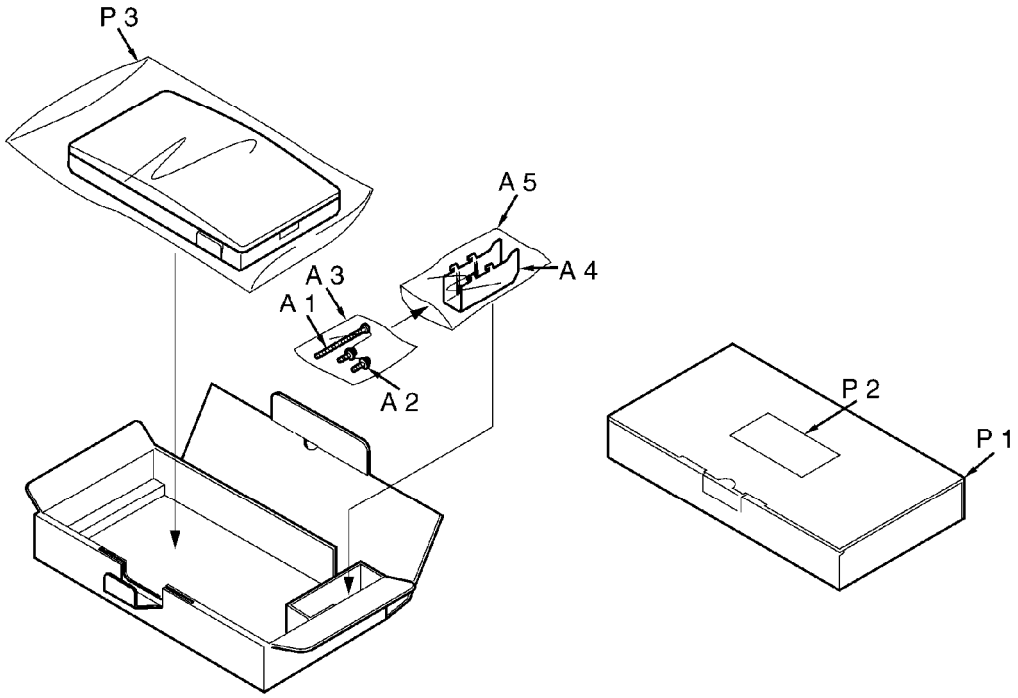
5. CABINET AND ELECTRICAL PARTS LOCATION



ACTUAL SIZE OF SCREW

Ret.No.	Figure	Part No.
Ⓐ	XTW3+S14P	
Ⓑ	XTW3+S8P	

6. ACCESSORIES AND PACKING MATERIALS



7. REPLACEMENT PARTS LIST

Model KX-TD190C

Note:

1. **RTL (Retention Time Limited)**
   The marking (RTL) indicates that the Retention Time is limited for this item.
   After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability depends on the type of assembly and the laws governing parts and product retention. At the end of this period, the assembly will no longer be available.
2. **Important safety notice / Components identified by the ⚠ mark indicates special characteristics important for safety. When replacing any of these components, only use specified manufacture's parts.**
3. **The S mark indicates service standard parts and may differ from production parts.**
4. **RESISTORS & CAPACITORS / Unless otherwise specified; / All resistors are in ohms (Ω) K=1000 Ω , M=1000k Ω / All capacitors are in MICRO FARADS (μ F) P= μ μ F / *Type & Wattage of Resistor**

Type

ERC:Solid ERD:Carbon PQRD:Carbon	ERX:Metal Film ERG:Metal Oxide ER0:Metal Film	PQ4R:Carbon ERS:Fusible Resistor ERF:Cement Resistor

Wattege

10,16:1/8W	14,25:1/4W	12:1/2W	1:1W	2:2W	3:3W

*Type & Voltage of Capacitor

Type

ECFD:Semi-Conductor ECQS:Styrol PQCUV:Chip ECQMS:Mica	ECCD,ECKD,ECBT,PQCBC:Ceramic ECQE,ECQV,ECQG:Polyester ECEA,ECSZ:Electlytic ECQP:Polypropylene

Voltage

ECQ Type	ECQG ECQV Type	ECSZ Type	Others	
1H:50V 2A:100V 2E:250V 2H:500V	05:50V 1:100V 2:200V	0F:3.15V 1A:10V 1V:35V 0J:6.3V	0J :6.3V 1A :10V 1C :16V 1E,25:25V	1V :35V 50,1H:50V 1J :63V 2A :100V

7.1. CABINET & ELECTRICAL PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
1	PSKM1068Z1	UPPER CABINET	
2	PSKV1011Z1	CABLE COVER	
3	PSKV1012Z1	TOP COVER	
4	PSKF1042Z1	LOWER CABINET	

7.2. ACCESSORIES AND PACKING MATERIALS

Ref. No.	Part No.	Part Name & Description	Remarks
A1	XYN4+C65FN	SCREW	
A2	XTW3+S8P	SCREW	
A3	XZB05X08A03	PROTECTION COVER / (FOR ACCESSORIES)	
A4	PSKV1013Z1	TEL, CORD COVER	S
A5	XZB13X35A01	PROTECTION COVER / (FOR TEL, CORD COVERS)	
P1	PSPK1545Z	GIFT BOX	
P2	PSQA2191Z	LABEL, MODEL No.	
P3	PQPP10047Z	PROTECTION COVER(FOR SET)	

7.3. MAIN BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB1	PSWP1TD190X	MAIN BOARD ASS'Y(RTL)	
		(ICs)	
IC9	PQVIMS7524	IC	
IC10	PQVIMS7524	IC	
IC13	PSVILMF90CCW	IC	
IC14	PSVILMF90CCW	IC	
IC17	PSVIMC14548V	IC	S
IC20	PSVIMC14548V	IC	S
IC21	PSVIMC14548V	IC	S
IC24	PQVINJM2901M	IC	
IC28	PQVINJM4558M	IC	
IC30	PQVINJM4558M	IC	
IC37	PQVISN7L38S	IC	S
IC42	PQVISN7L125S	IC	S
IC53	PSVIISD2500D	IC	
IC54	PSVIISD2500D	IC	
IC61	PSVIMC14548V	IC	S
IC67	PQVISN7L38S	IC	S
IC70	PQVINJM4558M	IC	
IC73	PQVISN7H402S	IC	
IC74	PQVISN7H74S	IC	
IC75	PQVISN7H74S	IC	
IC76	PQVIMB7HU04F	IC	S
IC77	PQVIMB7HU04F	IC	S
IC101	PQVITC7H00F	IC	S
IC102	PQVISN7L04S	IC	S
IC103	PQVISN7L04S	IC	S
IC104	PQVISN7L04S	IC	S
IC105	PQVISN7L640M	IC	
IC106	PSVIT16G1230	IC	
IC109	PSVIPS600EMT	IC	
IC110	PSVI63C03YH	IC	
IC111	PSWITD191C1	IC	
IC113	PSVIHY6264FD	IC	S
		(TRANSISTORS)	
Q1	2SB1132R	TRANSISTOR(SI)	
Q2	2SB1132R	TRANSISTOR(SI)	
Q7	2SC3326A	TRANSISTOR(SI)	
Q8	2SC2412K	TRANSISTOR(SI)	
		(DIODES)	
D1	RLS71	DIODE(SI)	
D4	PSVDRB160LT	DIODE(SI)	

Ref. No.	Part No.	Part Name & Description	Remarks
D5	PSVDRB160LT	DIODE(SI)	
D6	PQVDRLZ5R6	DIODE(SI)	
D15	MA143	DIODE(SI)	
D16	MA143	DIODE(SI)	
D17	MA143	DIODE(SI)	
D18	MA143	DIODE(SI)	
D21	MA704WK	DIODE(SI)	
D23	MA143	DIODE(SI)	
		(CAPACITORS)	
C1	PQCUV1C474ZF	0.47	
C2	ECEV1CS100	10	
C3	PQCUV1C474ZF	0.47	
C4	ECEV1CS100	10	
C6	ECUV1H470JCV	47P	
C9	ECUV1H101JCV	100P	
C11	ERJ3GEYJ123	12K (RESISTOR)	
C13	PQCUV1C474ZF	0.47	
C14	PQCUV1C474ZF	0.47	
C16	ERJ3GEYJ123	12K (RESISTOR)	
C24	ECUV1H103KBV	0.01	
C25	ECUV1H103KBV	0.01	
C28	ECUV1C104KBV	0.1	
C31	ECUV1C104KBV	0.1	
C32	ECUV1C104KBV	0.1	
C33	ECUV1C104KBV	0.1	
C34	ECUV1C104KBV	0.1	
C35	ECUV1H223KBV	0.022	S
C40	ECUV1H390JCV	39P	
C42	ECUV1C104KBV	0.1	
C50	ECUV1H104ZFV	0.1	
C51	ECUV1H104ZFV	0.1	
C52	ECEV1CA220	22	
C53	ECUV1C104KBV	0.1	
C56	ECEV1ES4R7	4.7	
C57	ECUV1H104ZFV	0.1	
C58	ECUV1H104ZFV	0.1	
C59	ECEV1CA220	22	
C60	ECUV1C104KBV	0.1	
C63	ECEV1ES4R7	4.7	
C73	ECUV1H150JCV	15P	
C74	ECUV1H150JCV	15P	
C75	ECUV1H150JCV	15P	
C76	ECUV1H150JCV	15P	
C77	ECEV1CA101	100	

Ref. No.	Part No.	Part Name & Description	Remarks
C79	PSCEV1HS010	1P	
C82	EECFE5R5474	0.47	
C84	PQCUV1C474KB	0.47	
C85	ECUV1H332KBV	0.0033	
C86	ECUV1C104KBV	0.1	
C87	PQCUV1C474KB	0.47	
C88	ECEV1CA220	22	
C89	ECUV1C104KBV	0.1	
C90	ECUV1C104KBV	0.1	
C95	ECUV1H223KBV	0.022	S
C96	ECUV1H223KBV	0.022	S
C97	ECUV1H104ZFV	0.1	
C99	ECUV1H223KBV	0.022	S
C100	ECUV1H223KBV	0.022	S
C101	ECUV1H223KBV	0.022	S
C102	ECUV1H104ZFV	0.1	
C103	ECUV1H104ZFV	0.1	
C104	ECUV1C104KBV	0.1	
C105	ECUV1C104KBV	0.1	
C106	ECUV1C104KBV	0.1	
C107	ECUV1E102JCV	0.001	
C108	ECUV1H104ZFV	0.1	
C109	ECUV1C104KBV	0.1	
C110	ECUV1C104KBV	0.1	
C111	ECUV1H104ZFV	0.1	
C112	ECUV1H104ZFV	0.1	
C113	ECUV1H223KBV	0.022	S
C114	ECUV1H223KBV	0.022	S
C115	ECUV1H223KBV	0.022	S
C116	ECUV1H223KBV	0.022	S
C117	ECUV1H223KBV	0.022	S
C118	ECUV1H223KBV	0.022	S
C119	ECUV1H223KBV	0.022	S
C120	ECUV1H181JCV	180P	
C121	ECUV1H181JCV	180P	
C122	ECUV1H223KBV	0.022	S
C123	ECUV1H223KBV	0.022	S
C124	ECUV1H181JCV	180P	
C125	ECUV1H181JCV	180P	
C126	ECUV1H223KBV	0.022	S
C127	ECUV1H223KBV	0.022	S
C128	ECUV1E104ZFV	0.1	
C129	ECUV1H104ZFV	0.1	
C130	ECUV1H223KBV	0.022	S
C131	ECUV1H223KBV	0.022	S
C132	ECUV1E102JCV	0.001	
C133	ECUV1H223KBV	0.022	S
C134	ECUV1H223KBV	0.022	S

Ref. No.	Part No.	Part Name & Description	Remarks
C135	ECUV1H223KBV	0.022	S
C136	ECUV1H223KBV	0.022	S
C137	ECUV1H223KBV	0.022	S
C138	ECUV1H223KBV	0.022	S
C139	ECUV1H223KBV	0.022	S
C140	ECUV1H223KBV	0.022	S
		(CONNECTORS)	
CN1	PSJS50Q57Z	CONNECTOR, 50P	
		(RESISTORS)	
J1	ERJ3GEY0R00	0	
J2	ERJ3GEY0R00	0	
R1	ERJ14YJ102	1K	
R2	PQ4R10XJ681	680	
R3	ERJ3GEYF104	100K	
R4	ERJ3GEYF104	100K	
R7	ERJ3GEYF104	100K	
R8	ERJ3GEYF104	100K	
R9	ERJ3GEYJ103	10K	
R10	ERJ3GEYJ272	2.7K	
R16	ERJ3GEYJ105	1M	
R17	ERJ3GEYJ820	82	
R18	ERJ3GEYJ121	120	
R19	ERJ3GEYJ121	120	
R20	ERJ3GEYJ121	120	
R21	ERJ3GEYJ121	120	
R22	ERJ3GEYJ121	120	
R23	ERJ3GEYJ152	1.5K	
R25	ERJ3GEYJ472	4.7K	
R26	ERJ3GEYJ474	470K	
R28	ERJ3GEYJ472	4.7K	
R29.	ERJ3GEYJ474	470K	
R30	ERJ3GEY0R00	0	
R32	ERJ3GEYJ223	22K	
R33	ERJ3GEYJ103	10K	
R35	ERJ3GEYJ105	1M	
R36	ERJ3GEYF102	1K	
R37	ERJ3GEYF102	1K	
R38	ERJWYJ101	100	
R39	ERJ3GEYJ103	10K	
R40	ERJ3GEYJ182	1.8K	
R41	ERJ3GEYJ472	4.7K	
R42	ERJ3GEYJ472	4.7K	
R43	ERJ3GEYJ334	330K	
R44	ERJ3GEYJ222	2.2K	
R45	ERJ3GEYJ473	47K	
R46	ERJ3GEYJ223	22K	
R47	ERJ3GEYJ222	2.2K	

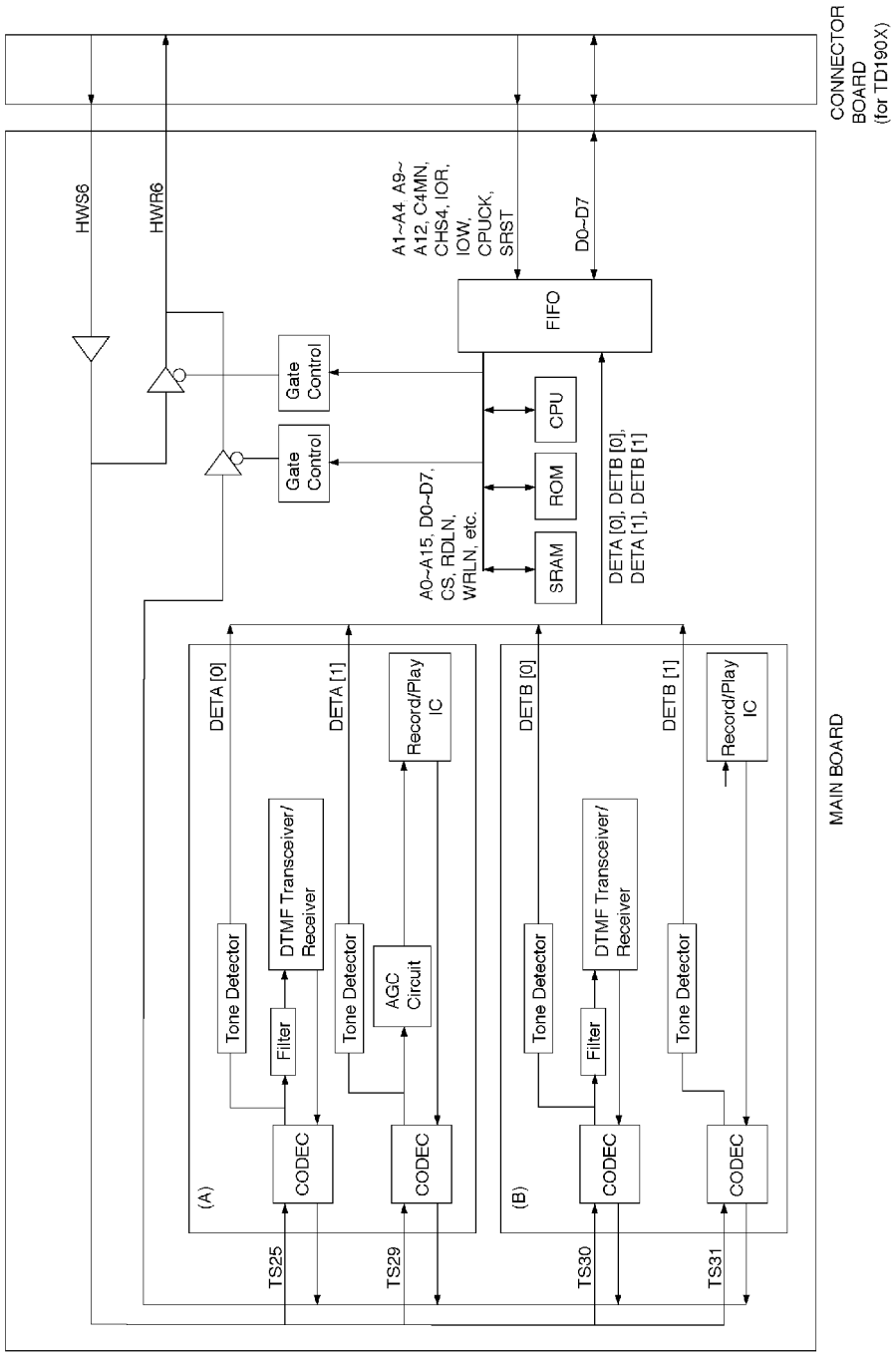
Ref. No.	Part No.	Part Name & Description	Remarks
R48	ERJ3GEYJ333	33K	
R49	ERJ3GEYJ103	10K	
R50	ERJ3GEYJ473	47K	
R51	ERJ3GEYJ123	12K	
R52	ERJ3GEYJ183	18K	
R53	ERJ3GEYJ100	10	
R54	ERJ3GEYJ102	1K	
R55	ERJ3GEYJ102	1K	
R56	ERJ3GEYJ103	10K	
R57	ERJ3GEYJ103	10K	
R58	ERJ3GEYJ333	33K	
R59	ERJ3GEYJ683	68K	
R60	ERJ3GEYJ103	10K	
R61	ERJ3GEYJ103	10K	
R62	ERJ3GEYJ333	33K	
R63	ERJ3GEYJ683	68K	
R64	ERJ3GEYJ823	82K	
R65	ERJ3GEYJ823	82K	
R66	ERJ3GEYJ123	12K	
R67	ERJ3GEYJ183	18K	
R68	ERJ3GEYJ823	82K	
R69	ERJ3GEYJ823	82K	
R72	ERJ3GEYF102	1K	
R73	ERJ3GEYF102	1K	
R76	ERJ3GEYF102	1K	
R77	ERJ3GEYF102	1K	
R83	ERJ3GEYF222	2.2K	
R84	ERJ3GEYF222	2.2K	
R87	ERJ3GEYF222	2.2K	
R88	ERJ3GEYF222	2.2K	
R91	ERJ3GEYF474	470K	
R92	ERJ3GEYF474	470K	
R95	ERJ3GEYF474	470K	
R96	ERJ3GEYF474	470K	
R98	ERJ3GEYF102	1K	
R99	ERJ3GEYF104	100K	
R103	ERJ3GEYJ820	82	
R107	ERJ3GEYJ121	120	
R108	ERJ3GEYJ101	100	
R109	ERJ3GEYJ101	100	
R110	ERJ3GEYJ101	100	
R111	ERJ3GEYJ101	100	
R112	ERJ3GEYJ101	100	
R113	ERJ3GEYJ101	100	
R114	ERJ3GEYJ101	100	
R115	ERJ3GEYJ101	100	
R116	ERJ3GEYJ333	33K	

Ref. No.	Part No.	Part Name & Description	Remarks
R117	ERJ3GEYJ333	33K	
R118	ERJ3GEYJ333	33K	
R119	ERJ3GEYJ223	22K	
R120	ERJ3GEYJ560	56	
R121	ERJ3GEYJ560	56	
R122	ERJ3GEYJ560	56	
R123	ERJ3GEYJ560	56	
R124	ERJ3GEYJ560	56	
R125	ERJ3GEYJ560	56	
R126	ERJ3GEYJ560	56	
R127	ERJ3GEYJ560	56	
R128	ERJ3GEYJ560	56	
R129	ERJ3GEYJ560	56	
R130	ERJ3GEYJ560	56	
R131	ERJ3GEYJ560	56	
R132	ERJ3GEYJ560	56	
R133	ERJ3GEYJ560	56	
R134	ERJ3GEYJ560	56	
R135	ERJ3GEYJ560	56	
R136	ERJ3GEYJ560	56	
R137	ERJ3GEYJ560	56	
R138	ERJ3GEYJ560	56	
R139	ERJ3GEYJ560	56	
R140	ERJ3GEYJ560	56	
R141	ERJ3GEYJ560	56	
R142	ERJ3GEYJ560	56	
R143	ERJ3GEYJ560	56	
R144	ERJ3GEYJ560	56	
R145	ERJ3GEYJ560	56	
R146	ERJ3GEYJ560	56	
R147	ERJ3GEYJ560	56	
R148	ERJ3GEYJ560	56	
R149	ERJ3GEYJ560	56	
R150	ERJ3GEYJ560	56	
R151	ERJ3GEYJ560	56	
R152	ERJ3GEYJ560	56	
R153	ERJ3GEYJ560	56	
R154	ERJ3GEYJ560	56	
R155	ERJ3GEYJ560	56	
R156	ERJ3GEYJ560	56	
JP3	PQ4R10XJ000	0	
		(OTHERS)	
BAT1	CR2354-1HF	LITHIUM BATTERY	
X1	PSVCC0009B	CRYSTAL OSCILLATOR	
X2	PSVCC0010B	CRYSTAL OSCILLATOR	
X4	PSVCCR0357B7	CRYSTAL OSCILLATOR	

7.4. SUB BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB2	PSWP2TD190X	SUB BOARD ASS'Y	
		(CONNECTORS)	
CN100	PSJS60Q58Z	CONNECTOR,60P	
CN101	PQJP50A08Z	CONNECTOR,50P	
CN102	PQJP34A08Z	CONNECTOR,34P	
		(SWITCH)	
SW100	ESD32223	SLIDE SWITCH	

8. BLOCK DIAGRAM



9. SCHEMATIC DIAGRAM (MAIN BOARD)

10. SCHEMATIC DIAGRAM (CONNECTOR BOARD)

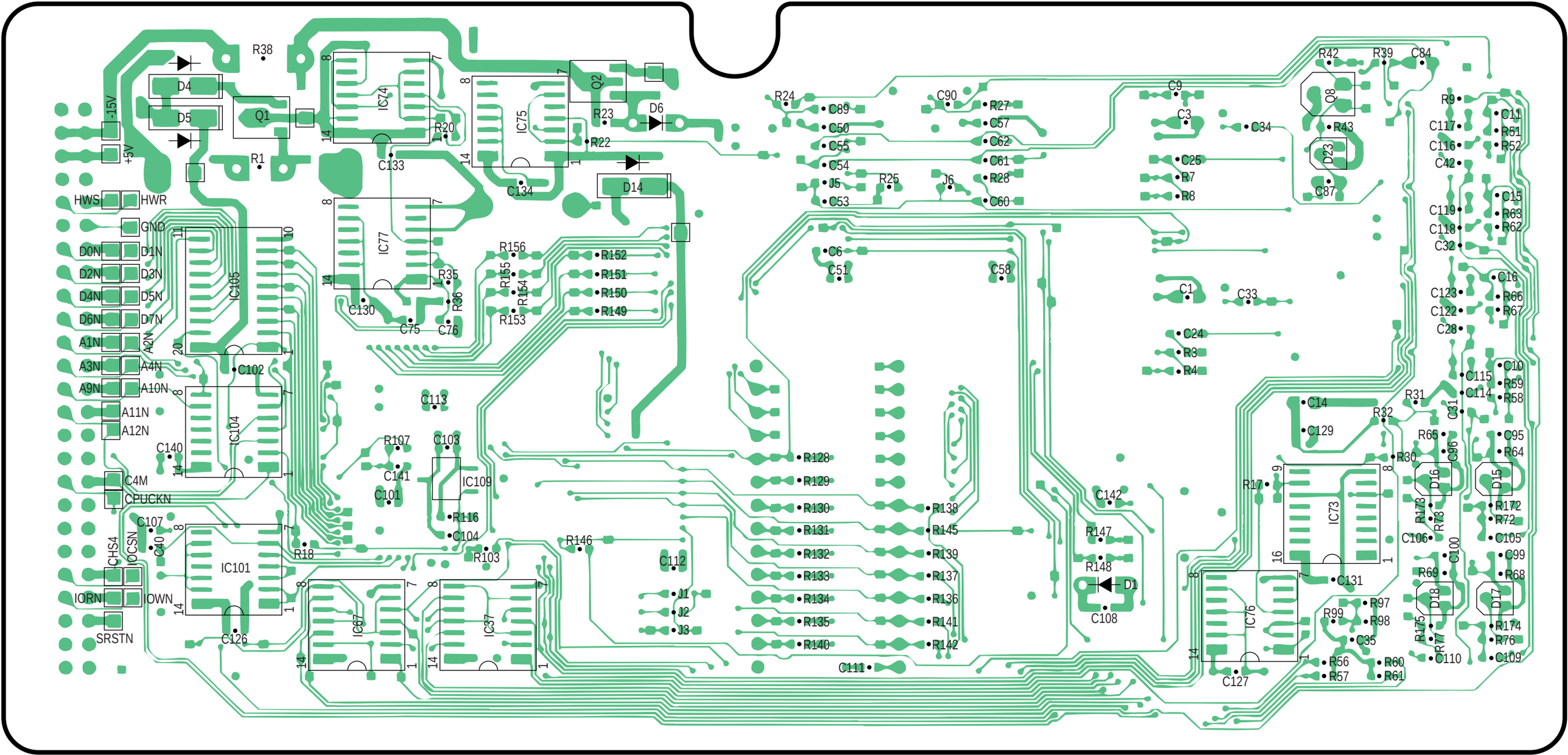
11. PRINTED CIRCUIT BOARD (MAIN BOARD)

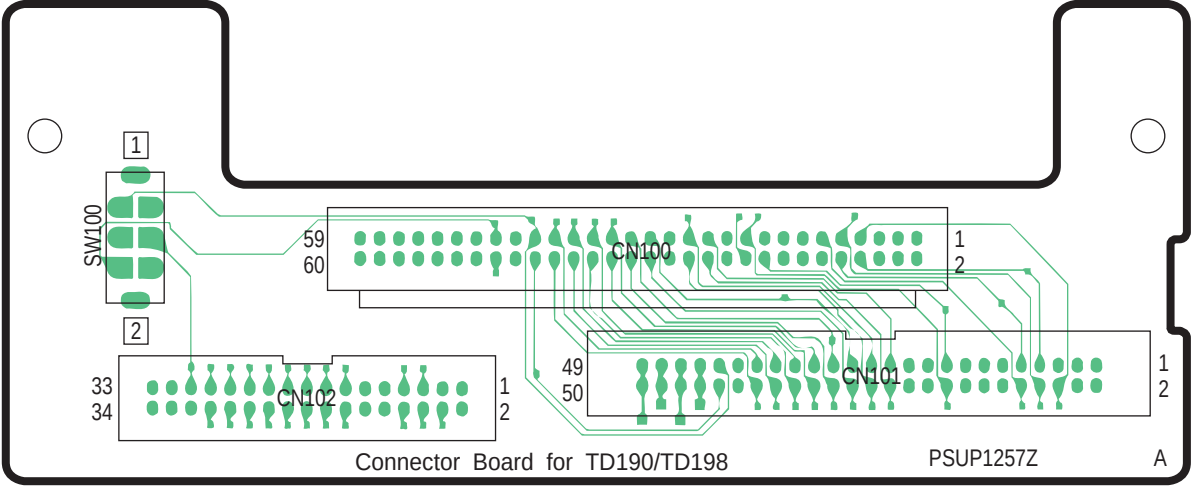
11.1. Component View

11.2. Bottom View

12. PRINTED CIRCUIT BOARD (CONNECTOR BOARD)

A (Q) KXTD190C / Printed in Japan


-15V
+5V
HWS
HWR
GND
D0N
D1N
D2N
D3N
D4N
D5N
D6N
D7N
A1N
A2N
A3N
A4N
A9N
A10N
A11N
A12N
C4M
CPUCKN
CHS4
IOCSN
IORN
IOWN
SRSTN
R38
D4
D5
Q1
R1
IC74
C133
R20
IC75
C134
Q2
R23
D6
R22
D14
IC77
C130
C75
C76
R35
R36
R156
R155
R154
R153
R152
R151
R150
R149
IC105
C102
IC104
C140
C113
R107
C103
C141
C101
IC109
R116
C104
R103
R146
C107
C40
R18
IC101
C126
IC67
IC37
C112
J1
J2
J3
R128
R129
R130
R131
R132
R133
R134
R135
R140
R138
R145
R139
R137
R136
R141
R142
C111
R24
C89
C50
C55
C54
J5
C53
R25
C90
J6
R27
C57
C62
C61
R28
C60
C6
C51
C58
C9
C3
C34
C25
R7
R8
C1
C33
C24
R3
R4
R42
R39
C84
Q8
R43
D23
C87
R9
C11
C117
R51
C116
R52
C42
C15
C119
R63
C118
R62
C32
C16
C123
R66
C122
R67
C28
C115
C10
C114
R59
R58
R31
C31
C14
C129
R32
R65
C96
R30
C95
R64
D16
D15
R17
C142
R147
R148
D1
C108
IC73
C131
R178
R73
C106
R172
R72
C105
C100
C99
R69
R68
D18
D17
R175
R77
R174
R76
C110
C109
IC76
C127
R99
R97
R98
C35
R56
R57
R60
R61



Connector Board for TD190/TD198

PSUP1257Z

A

NOTCHT FILTER
620Hz Cut

DTMF TRANSCEIVER/
RECEIVING

NOTCHT FILTER
620Hz Cut

DTMF TRANSCEIVER/
RECEIVING

TRANSMITTING DTMF:

C : 5V
X : 0V

RECEIVING DTMF:

RECORD/PLAY IC

RECORD/PLAY IC

Auto Gain Control CIRCUIT
(AGC CIRCUIT)

TONE DETECTOR CIRCUIT

5V
0V

H — 5V
0V

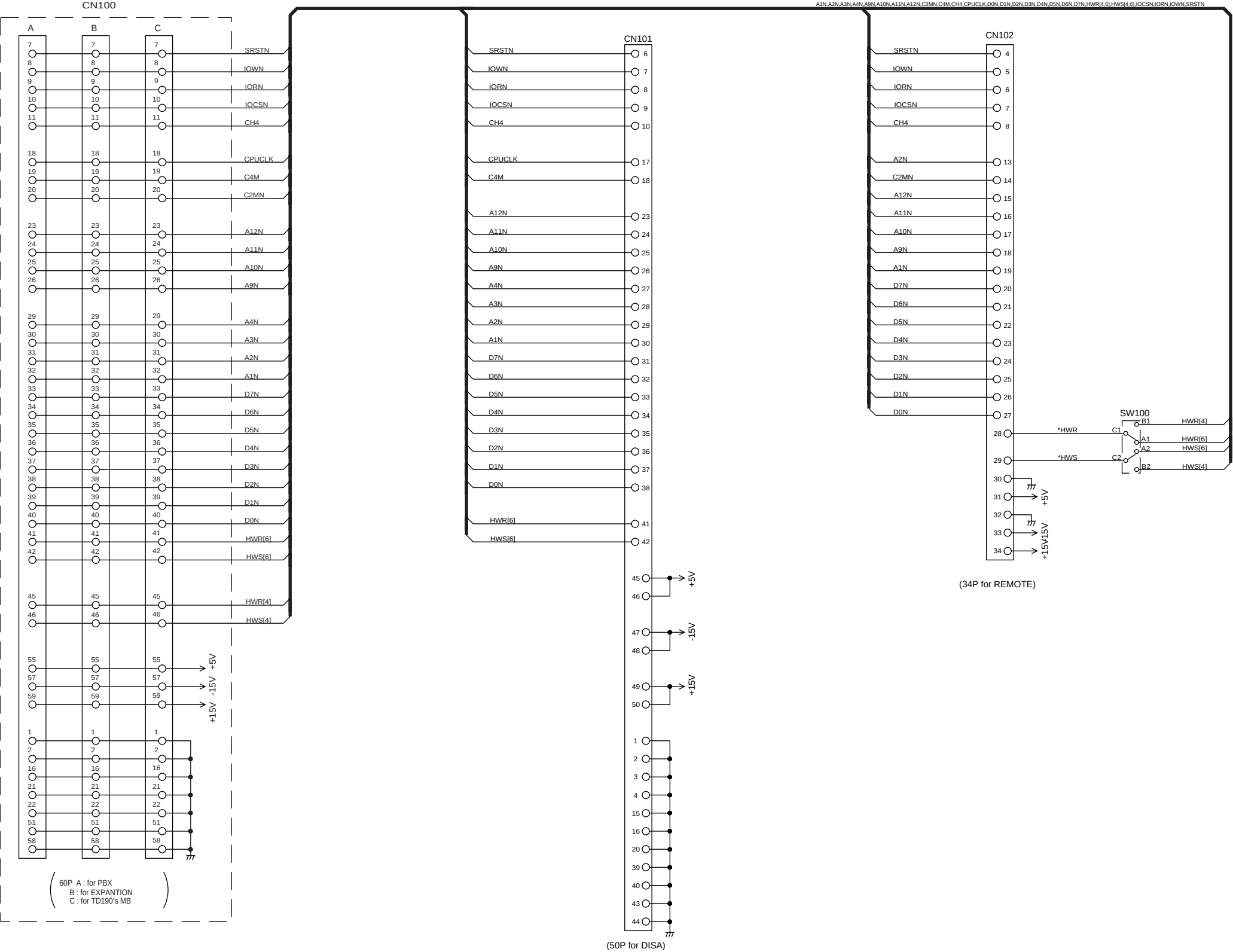
NORMAL : H
RESET : L

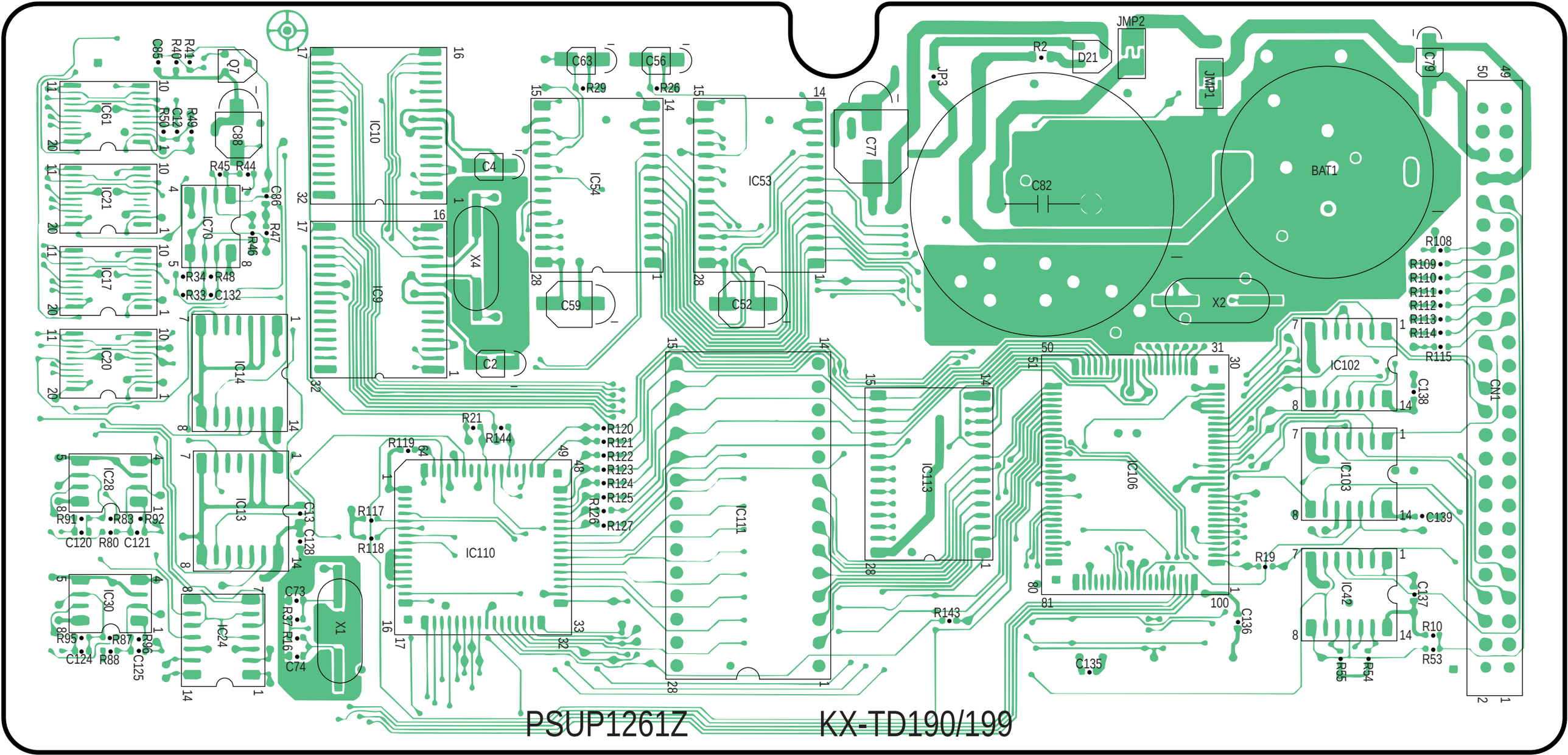
NORMAL : H
RESET : L

4M
8K
5V
0V
5V
0V
5V
0V
8Mz
5V
0V
NORMAL : H
RESET : L

: FLOW OF VOICE DATA WHEN PLAYING

: FLOW OF VOICE DATA WHEN REC


A1N,A2N,A3N,A4N,A9N,A10N,A11N,A12N,C2MN,C4M,CH4,CPUCLK,D0N,D1N,D2N,D3N,D4N,D5N,D6N,D7N,HWR[4,6],HWS[4,6],IOCSN,IORN,IOWN,SRSTN
CN100
A
B
C
SRSTN
IOWN
IORN
IOCSN
CH4
CPUCLK
C4M
C2MN
A12N
A11N
A10N
A9N
A4N
A3N
A2N
A1N
D7N
D6N
D5N
D4N
D3N
D2N
D1N
D0N
HWR[6]
HWS[6]
HWR[4]
HWS[4]
+5V
-15V
+15V
60P A : for PBX
B : for EXPANTION
C : for TD190's MB
CN101
(50P for DISA)
CN102
(34P for REMOTE)
SW100
*HWR
*HWS
B1
C1
A1
A2
C2
B2


PSUP1261Z
KX-TD190/199